THE VETERINARY RECORD

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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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"PINK EYE"

A few cases of this disease have recently been seen in London so we may expect to see another outbreak. The symptoms exhibited are: closed eyes, swollen legs, and high temperature, and so far complications have been absent. It will be interesting to watch its developement, and practitioners may help to elucidate its method of spread if they will carefully note its first appearance in each district and record their observations.

RABIES.

Veterinary practitioners in London say that cases of rabies are again increasing but that owners fail to report to the authorities. Some of this negligence is undoubtedly due to ignorance of the law, and the veterinary attendant should always advise his client of the risk attending neglect to report. Now that this disease is scheduled in the Contagious Diseases (Animals) Act, the penalty for any offence may be a fine of £20 or imprisonment. The necessity of reporting every case lies in the fact that only by these reports can authorities know when to impose restrictions. Early restrictions prevent an outbreak reaching any great proportions, and they are the sooner removed because the sooner effective. The practitioners who make canine practice a speciality run quite enough risk without having rabid dogs to attend to, and their own interests suggest lending all the weight they can to measures so essentially self-protective as stamping out rabies.

THE NEW CHARTER.

At the meeting of Council held on Thursday last, which we shall report next week, the subject of most importance was the "first draft of the Petition for a new Charter." This was considered and approved with some slight alterations. It has now to be revised by a parliamentary draughtsman and then a copy will be sent to every person on the Register of Members of the Royal College of Veterinary Surgeons. Although very little open opposition is now given to the Charter in Council it is quite understood that opposition will be given when the petition is before the Privy Council. Individuals who have posed before the profession as its most ardent friends for years will then be seen in their real characters, and the practitioner must not lose sight of the instrument which he looks to to give him justice. Last year it was found necessary to make an effort to alter the composition of our Council, and great success attended the effort. This year we must watch anxiously the progress of affairs for it may be necessary again to emphasise the desires of the profession. Open opposition has almost ceased, but a more dangerous and insidious form of obstruction is threatened. The false friend is worse than the open enemy, and the man who pretends to conversion is more dangerous than he who boldly proclaims his dissent. Reports of Council meetings can never give exactly a correct impression of the events. Wise men must read between the lines.

THE SCHOOLS.

All the schools are now open, and we hear that each has had a more than usually heavy entry of new students. Only about one-half of those who enter the schools ever enter the body corporate; but even this number seems to be in excess of the demand. Assistants provided with a diploma can be had at a salary which seems very inadequate to the amount of time and money expended in gaining their licence to practice. What is the attraction which draws so many into our ranks? It is not the probability of gaining money. The average practitioner is not well paid, and his income compares badly with that of the average tradesman of a provincial town. What is the inducement, then? First, we may acknowledge that the life is not an unhealthy nor an unpleasant one. Our calling now affords a very fair social position, it is not monotonous, and it generally includes amongst its business paraphernalia a horse and trap. Thomas Carlyle long since noticed the remarkable effect on the mind of the average Briton of a horse and trap. It inspires a certain amount of awe and respect. It suggests ease and comfort, if not opulence, and it puts its owner in the position of being admired and envied. "Gigology" is the term applied to this form of worship, and many idolaters of this persuasion exist amongst the young men who attempt to enter the veterinary profession. Every Englishman believes he can drive a horse, and this simple faith is not easily upset. We only venture to suggest that this apparently easy and dignified performance is but a small part of the life of a busy practitioner, and that parents and guardians might do well to impress upon their ambitious young charges that very much hard work and not very much remuneration are the special attributes of the first twenty years of those who enter the veterinary profession. Every year the course of study becomes more severe, the series of examinations more searching, and the struggle for existence keener. Special aptitude and steady work are more and more indispensable, and the time seems approaching when graduates not possessed of an independent income will find it hard to ever attain a stable position in which the pecuniary return is proportioned to the expense of the struggle.

CASES AND ARTICLES

TUMOURS IN A HEIFER: An Interesting Case.

By J. H. Parker, M.R.C.V.S.

On October 7th I was called by a local farmer to give an opinion on a yearling heifer which had developed "some queer lumps" under her skin. The heifer had been purchased at a sale, and her pedigree could not be traced; had been treated by the owner for "the husk" a fortnight previous to my seeing her.

Semiology: Coat staring, rumination suspended, appetite capricious, muzzle dry; superficial temperature irregular; pulse 90; temperature per rectum 105 F, respirations, 35. A short moist cough—the supposed husk. Head carried low, and nose poked out, and evident difficulty in breathing. The "lumps" had been gradually getting larger during the previous week, and had the following appearance and positions:—At a first glance the animal had quite a "knotty" appearance, and was considered quite a curiosity by all who had seen her. There were five of them around the throat, two in each parotidean region, and one in the lower part of the throat immediately below the cricoid cartilage. There was one near the joint of each shoulder, and one in each flank, four small ones at the root of the tail, and some small ones could also be felt in the region of the mammæ. The tumours which could be easily moved about beneath the skin were of a lozenge shape, and of various sizes—being from one to five inches in their long, and half-an-inch to an inch and a-half in their short, diameter. Being anxious to know whether they contained pus or not, I inserted a lance into one of them, but did not obtain any. Auscultation and percussion of the chest showed nothing abnormal, but on auscultating the larynx I heard a slight grating sound synchronous with expiration, and which I attributed to pressure on the larynx by the diseased juxtaposed glands.

Suspecting a similar condition of the internal lymphatic glands I advised the owner to destroy the animal, which was done immediately; and Mr. F. A. Verney and I conducted the autopsy, which revealed the following lesions:—The above diseased glands were situated in the subcutaneous fascia, and apparently only attached to that structure, as they could be easily removed by the finger. The smaller ones when cut into resembled the hemisection of the testicle of a lamb, or simply an enlarged lymphatic gland. The larger ones, especially those in the throat and flanks, had undergone a purulent degeneration in their centres which had an ichorous appearance. The thymus gland was three times its normal size for an animal of this age. On laying open the thorax, the lungs, heart, pericardium, &c., were apparently normal; but the bronchial glands were of great size, and resembled the previous ones in section, &c.

On opening the abdomen the viscera, with the exception of the sublumar and mesenteric glands, were apparently healthy. These glands were of enormous size, and to their enlargement and consequent obstructions to the lacteal circulation I attributed the diarrhœa which was present.

Not having the appliances I could not make a microscopical examination to determine whether the case was one of tuberculosis or actinomycosis but from analogy and from a macroscopical point of view I am of opinion it was a case of tuberculosis.

To me the above case was instructive, as it taught me the true position of the lymphatic glands, and seemed to suggest that the disease was confined to the lymphatic system, and that the enlargement of glands was due to nature trying to arrest the spread of the disease by leucocytic proliferation in the glands.

STRONGYLUS ARMATUS IN A COLT.

By Henry Beach,
Pupil to Mr. J. B. Dier, M.R.C.V.S., Dane Hill.

On Monday, October 5th, 1891, we received a message to go and look at a cart gelding, 3 years old, the property of F. J. Budd Budd, Esq., that was said to be suffering from gripes. Mr. Dier not being at home at the time, the ordinary gripe medicine was sent by bearer to be given immediately. On our arrival about two hours afterwards we were surprised to hear that the colt was just dead.

On making enquiries we were told the colt appeared quite well about three hours before death, and was feeding in the pasture with the other horses. When first noticed to be ill he was very dull, standing over a pool of water, and disinclined to move. After a short time he lay down in a natural position, continually looking round towards his sides but not attempting to roll or struggle in the slightest degree, and remaining quiet until death.

Post Mortem. On opening the abdominal cavity it contained from 4 to 5 gallons of a dirty brown coloured fluid, which appeared to have escaped from the intestines. The peritoneum was intensly inflamed, and covered with flakes of lymph; the intestines were inflamed throughout the whole extent. On opening the stomach nothing unnatural was noticed except about a dozen partially developed bots, *œstrus equi.* But on opening the colon the internal coat was almost covered with worms *(Strongylus Armatus)* from ½ an inch to 1½ inches in length; firmly attached to the walls of the intestines which were perforated in several places, thus allowing the fluid contents to escape into the abdominal cavity.

The colt had been running with six more on a very poor pasture during the early part of the summer, and two days previous to his death he was changed into rich grass, when he seemed a little relaxed, but no worms were seen.

I should be very pleased if any reader of *The Veterinary Record* could tell me why the animal did not evince more pain during life.

THE ROYAL VETERINARY COLLEGE:
Its Origin and Progress.

It would be a great mistake to suppose that veterinary science or veterinary art was suddenly brought into Britain at the end of last century by the founding of the Veterinary College in London. The immediate effect upon the *art* was very slight, and upon the *science nil*—the remote effects immeasurably great. We judge of the condition of farriery in the pre-college days by the books on the subject which have been handed down to us, and we find that, for some years after the founding of the College, nothing emanated from that institution or its graduates either scientifically or practically as good as was to be found elsewhere. Of course in those days, as in these, it would be erroneous to value the average practitioner by the standard of those who wrote books. There were then, and there are now, first-class practitioners who contribute nothing to literature; and we may perhaps correctly guess that then, as now, some of the books written were the work of fifth-rate men. Practitioners who write books may be divided into three classes: enthusiasts, men who have nothing else to do, and men who feel that they are masters of their subject. Time riddles literary grain very thoroughly—the rubbish disappears and only the best remains. Every generation adopts from its predecessor that which time and experience has verified, and adds something as the result of its own labours. Inevitably it adds a good deal which is untrue and bad, and needs correction by the next generation. It may be inferred, therefore, that the books on the art of farriery which have survived to our day represent a state of things very far in advance of the general practice of the contemporaries of the author.

It has been customary to trace back veterinary literature to Zenophon, and to claim that learned and versatile Greek as almost one of our profession. We might as well go back to Jacob, who certainly knew a good deal about the breeding of cattle and sheep, and possibly something of their diseases. The earliest writers who referred to the diseases of animals were not veterinarians—they were authors of works on horses or agriculture who added a chapter on general management, with a few references to disease. Another class of early writers were medical practitioners or teachers, who, not being allowed to dissect human bodies, made their studies on animals, and thus laid the foundation of veterinary anatomy. "It was about three hundred years after the birth of Christ," says Blaine, "when the true father of the art appeared." This was Vegetius, who wrote "*De Arte Veterinaria.*" For several centuries little addition or improvement appeared—in fact, not until the 16th Century does any great attention appear to have been paid to the art. Probably royal studs and cavalry regiments had always some individual attached to them who devoted special attention to the diseases of the horse; In no other position could a man have existed solely by his practice: consequently we find that when veterinary literature again began to revive its authors were mostly teachers of equitation, farriers to the king, or physicians—the art, such as it was, remained in the hands of stablemen and farriers. Other animals than the horse received little notice, probably because their money value was comparatively so small that any expenditure on them would be looked upon as uncalled for.

On the Continent the revival of veterinary literature in the first half of the 16th Century was initiated by Ruelli, a French physician, who by command of Francis the First translated from the original Greek into Latin one of the few books which survived the dark ages. This was a collation by order of the Emperor Constantine, of all that had been written previous to its production. A little later the works of Laurentius Ruffius appeared; this writer was an Italian, and to him we are indebted for the earliest distinct account of Influenza in horses. In this country the only two writers of the century were Blundeville and Mascal, both of whom were riding-masters.

In the 17th Century Ruini published at Venice, in 1618, a book on "*Diseases and their Remedies*" with anatomical plates, which apparently formed the foundation for many future writers. In 1698 Sollysel, a French riding-msster, published a book on the horse which showed correct observation and much common sense. On the art of shoeing he was especially good. In England the century produced two authors who did good work, Gervas Markham, and Snape. Markham's tenth edition appeared in 1668, and in the preface he says "It is more than fifty years agon since I began to sail in this ocean and to discover the fruitful Traffick of this needful art." The title page runs as follows—"Markham's Masterpiece containing all knowledge belonging to the Smith, Farrier or Horse-leech, touching the curing of all diseases in horses. Drawn with great pains and most approved experience from the public practice of all Foreign Horse Marshalls in Christendome; and from the private practice of all the best Farriers in this land." Blaine describes the production as "grossly absurd and strictly empirical," and in the light of modern science the criticism is true enough, but it is just probable that similar words may be applicable to the best text books of our day when they survive the writer by two hundred years. Markham at any rate recognised that Roaring is hereditary, or as he put it due to "descent," which was more than the celebrated surgeon Cline knew a hundred years later. He also taught that Glanders was contagious, a doctrine denied by Bracken at the end of the next century. He correctly described Founder in the feet, and strange to say advises compulsory movement of the horse, along with other measures less defensible but which were practised only a few years ago—as blood-letting, and paring the soles as thin as possible. Snape was Farrier to Charles II, and wrote on the Anatomy of the horse, illustrating his work with a number of engravings. About this time too the Worshipful Company of Farriers of the City of London were granted a Royal Charter, giving them jurisdiction in the Metropolis and for seven miles round over the members of their calling. The

reason stated in the Charter for this grant of power is "that divers inexpert and ignorant men have pretended to skill in the care and treatment of horses, and thus caused great loss and harm to their owners." The Company possessed the power of preventing unfit persons practising.

In the 18th Century until about the middle, little was added to our literature, but the art had made considerable progress, and the practitioner was becoming accepted as an expert. In 1750 Gibson, who had been surgeon in a cavalry regiment, but who then was practising farriery in London, published two volumes.

Gibson's work is certainly the best of all the early English productions in farriery. He classified his diseases with some skill, described his symptoms from what he had seen, and, thanks probably to his surgical knowledge, was able to see the absurdity of much of the treatment advised by his predecessors. His treatment was essentially empirical, but his common sense saved him, on the one hand, from the laughable crudities of his predecessor, Markham, and, on the other, from the pretentious theories of his successor, Bracken. Although the works of Bartlett and Bracken, both of whom were surgeons, were published some years after Gibson's, they are far behind his in value. Osmer, another surgeon who practised the veterinary art in London in the 18th Century, published a treatise "*On Lameness and Shoeing.*" Upon the system of shoeing he then recommended very little, if any, improvement has been made to this day. Other writers from whom some idea of the practices adopted at the end of last century may be gathered are: James Clark, of Edinburgh, who wrote on horse-shoeing; Strickland Freeman, whose work on "*The Horse's Foot*" is still an admirable production; and Mr. Taplin, a surgeon who had adopted farriery as a calling, and wrote a "*Stable Directory.*"

In France the art and science had made much greater progress than in Britain. Veterinary colleges had been established at Lyons and Paris by Mons. Bourgelat, under Government direction." La Fosse, father and son, had written copiously and well upon nearly the whole field of veterinary science. Veterinary students were submitted to a long course of tuition and carefully examined before being granted a certificate. If their teaching, so far as the use of remedies goes, seems to us now very erroneous, it must be remembered that the practice of medicine was then purely empirical, and that we have made but very little advance in putting therapeutics on any firmer basis. The excessive blood-letting which in those days was adopted in nearly every case of injury or disease is now discarded, but the funny mixtures of vegetable drugs used then were not nearly so dangerous as the chemical productions employed now-a-days, and the theories which guided their use were in no way more vague and mysterious than the miserable hypotheses which now are called principles of therapeutics.

Towards the end of the 18th century the more educated class of horsemen began to revolt against the ignorant empiricism of the farrier, and many men with a love of the horse and the training of surgeons forsook their practice amongst men and devoted their attention entirely to the horse. At least one man had sought in foreign veterinary schools the training his own country could not give. The Odiham Agricultural Society had determined to send one or two young men to be educated at Alfort, and there was generally a recognition of the want of trained practitioners to look after the ills of domestic animals. At this juncture it was that a French veterinarian, Charles Vial de St. Bel, landed in England and proposed the founding of a veterinary school. After many difficulties he and the Odiham Society agreed to act together. Their proposal to send students to France was given up, and St. Bel's suggestion approved. Meetings were called, the project advertised, and a quick response was made by the public, with the result that it was decided in 1791 to found a Veterinary College in London and to appoint St. Bel as Professor.

(To be continued.)

VETERINARY SOCIETIES.

NATIONAL VETERINARY ASSOCIATION,

Meeting at Doncaster, July 1891, Prof. Axe in the chair.

PAPER ON "BLACK QUARTER, AND ITS SO-CALLED PREVENTIVES."

By Professor Penberthy.

DISCUSSION.

Mr. McGavin:—When I read this paper I was a little disappointed. I really thought that we should have had a more exhaustive paper. Certainly we are very much obliged to any person who writes a paper for our benefit, and it is for us to add what little we can toward the discussion. There are certain exciting causes in black leg that are never mentioned in this paper. I do not say it is not due to bacteria, that would throw away a great deal of what has really been proved both here and on the Continent, but there are a great number of exciting causes that are really not mentioned. I find in my experience that Herefords are most liable to black leg. Cross-bred cattle are not so liable in this district. I find it attacks both lowland farms and highland farms, but principally the lowland and the best pastures. With regard to age, we get it from four months up to 12 months; after 12 months we have few deaths, and after 18 months it is very seldom that we get a death at all. So that the mortality of black leg is principally confined to animals from 6 to 9 months old. It is said that animals in calf are not subject to it; also that animals that are suckling are exempt, but I have found cases where both have been affected. There is a farm in my district where a man always lost a certain number of sheep that he was feeding, from black leg. He was advised to put up a small shed—a low shed covered with corrugated iron. He did so; he housed the animals every night, and since that plan has been carried out the man has not lost one from black leg. Now we come to the feeding. I believe that feeding has a great deal to do as an exciting cause with regard to this disease. You will always find it attacks animals that are

going ahead quickest, generally the best animals on the farm. Turnips are considered to have a great deal to do with this disease as the exciting cause—so much so that several farmers have discarded the use of turnips altogether, and let their animals stay out as long as they can in the winter. They get the animals in, give them hay and corn, and find that a very great preventive against this disease.

We come now to the prophylactics. Prof. Penberthy brings forward Mr. Butcher, of Cleobury, who says that cake is prophylactic. Be that as it may, you will find that if you feed young animals on decorticated cotton cake you will have a great mortality. If you give animals oil cake you will have less, but where oil cake is used I have seen black leg in a great number of cases. As a prophylactic, chloride of sodium is the most common. A great number of farmers, experienced men, say, "Take chloride of sodium, it is one of the best prophylactics you can get for this disease. Give them plenty of chloride of sodium and combine it with the food, and you will find it is a good prophylactic." There are others who suggest sulphate of magnesia, nitrate of potash, chlorate of potash, and several other things. I may say in my own experience I have found sodium sulphite to be the best medicinal agent. Then as regards setons. Professor Penberthy says he has seen several animals on one farm lying dead with setons in their dewlap. That has not been my experience. I have often setoned animals on farms where animals have died, and after they have been setoned no more deaths occur. With regard to setoning there is a difference of opinion. Some people seton right through the dewlap crosswise. I do not think that is a good way at all. If you wish to seton I believe you ought to do it lengthwise, and have it from four to six inches in length. If the setoning is properly carried out, I believe it is a very good prophylactic, in fact almost the best. With regard to the injection of lymph, I have never seen it done. Professor Penberthy has performed it within 20 miles of our neighbourhood, and he has had a great amount of success I believe; but still in those cases we found there was a great number of deaths. It does not exempt them. As regards cure, I have never seen any animal cured in my experience. Parts have been cut and several things applied, but I have never yet seen or heard of any person curing an animal with black leg.

Mr. J. Arson:—I should like in justice to Prof. Penberthy to say with regard to the paper being short, it was the request of the Committee that it should be short, for it was expected that it would be taken on the first day.

Mr. H. Thompson:—When I first started practice I found a great many cases of black leg in the district, and nearly everyone had a certain specific as a preventive. The oldest fashioned one was the crushing up of garlic with salt, and putting it into the dewlap as a seton or rowel. Another was the administration of an ounce of turpentine and a little oil once a month. Another was half an ounce of saltpetre once a fortnight. But the greatest preventive of all was passing the tape right through the dewlap. I therefore commenced the seton, and in the neighbourhood every year for some 20 years, I setoned from 400 to 500 calves. It was a very simple operation, and I could do one in about half a minute with the frog seton needle and 15 inches of tape smeared with a little blister ointment. The thing has gradually fallen off, until last year I only did 16 animals—five on one farm, three on another, and eight on another. There has not been a case of black quarter in the district for the last eight years. I have seen farms on which three, four, and up to seven animals have died, and immediately the setons were put in the disease stopped, and I never knew one die with the seton in, but I have heard of another practitioner who had one that died 24 hours afterwards. That is the fact with reference to the seton, but how it acts I cannot tell. I quite agree with what Mr. McGavin said with respect to decorticated cotton cake. It ought not to be given to young animals under 12 months old. Decorticated cotton cake is very bad for young animals, but for milch cattle it is one of the finest foods we have. As we have been so successful with chloride of sodium and setoning, I do not see why they should be put aside. It has been said that injection of muscle juice is the best thing, but it is such a delicate process to get it into the blood. If you can get it into the blood no doubt it will produce a beneficial result, but the great danger is of getting it into the tissues, where it produces a serious effect. I may say that I have never seen a case of black quarter cured, nor have I seen one where the disease has been confined to a certain area and terminated in an abscess. It generally kills in from 12 to 24 hours.

Mr. H. Olver:—I agree in many respects with what has been said by a previous speaker, but the question of setons up to now has been a very prominent one, and perhaps I should do some good if I quote a case that happened in my practice last year. There is a farmer in the neighbourhood who raises an average of 60 calves a year. He came to ask me if I believed in setoning for black leg. I said "Yes." He said "I do not." The result was that one-half of the calves were setoned, and he lost seven out of those that were not setoned, but did not lose one out of those that were setoned. This year we have done the same again. I saw him a month afterwards, and he had lost one out of those that were not setoned, but those that were setoned were all right. I think that is rather strong evidence in favour of setons. My experience in a country district is that whether you give decorticated cotton cake or linseed, or what not, on some farms and on some pastures you will get black leg, and on other farms, feed how you will, you will never get it. I think that points to the fact that it is due to a bacillus, and that if you have the bacillus present, no matter how you feed your animals, you will get the disease at certain times of the year. I may say this, however, that it is proved very plainly that sheep get black leg as well as cattle. Now, as to prophylactics, I agree with Mr. McGavin that hyposulphite of soda has been more effectual than anything else I can name; but I do not agree with him that any particular breed of cattle is more susceptible to the disease than others. I do agree that herds of cattle that are in an especially thriving condition appear more susceptible to black leg than herds which are not so good. It is well understood that cattle when doing particularly well are most liable to attack.

Mr. Olver:—I have known calves to die with setons in the dewlap at different times; and I should like also to say that I have known two cases of recovery.

Prof. McFadyean:—The point which is probably of the greatest interest to us is the prophylaxis of black quarter, and of course before we can discuss that we require to be informed as to the cause of the disease. It stands proved beyond dispute that the cause of black quarter is the presence of a microbe in the tissues. I do not think in this disease predisposing causes have the same importance as in the anthrax or tuberculosis, and I doubt very much if the Hereford breed has the special predisposition which Mr. McGavin assigned to them. Possibly in his case the Hereford is the commonest breed. For some years I have taken a great interest in the subject of the prevention of black quarter, my attention having been frequently drawn to notices in foreign journals regarding the inoculation of animals with a view to protection, and inasmuch as nearly all the reports were favourable, and the experiments were on a gigantic scale, I was strongly impressed with the view that a method had been discovered of actually protecting animals against black

quarter by inoculating them with an attenuated virus. I was instrumental in getting the method tried on a small scale in this country, and I am bound to confess that the results were such as to shake my previous belief very considerably. It is very difficult to obtain conclusive evidence on this matter—much more so than in the case of anthrax. You may adopt any method of protection you like, whether setons or inoculation, and afterwards endeavour to produce the natural disease in these animals, presumably protected, but the difficulty is that one cannot be sure of producing the disease even in uninoculated animals without killing them, for when you take the strongest muscle juice or powder unattenuated, it sometimes happens that you can introduce enormous doses into an unprotected animal. In other cases you may introduce an infinitesimal quantity of muscle powder into an animal after you think you have attenuated it, and the animal dies from malignant disease. I am happy to know that the Midland Counties Association is engaged in a series of experiments designed to throw light upon that very important point.

Mr. Bowhill: I will take advantage of the privilege you have allowed to visitors, to make one or two remarks on this subject. With regard to the prophylactics, I have read Professor McFadyean's observations upon Kitt's method, and I have tried dry muscle juice or powder, sterilised on glass plates, and have inoculated calves, the result being that while in some cases we got an elevation of temperature, in others the virus was so uncertain that we could get no guide to know what we were working at: in fact, it is just like a man going in the dark. You take the juice of muscle, you try it on a plate, sterilise it; you do not know what you have got in it. It is not like Pasteur's or Chauveau's vaccine, which are attenuated, in which case the practitioner knows exactly what he is using; he knows the strength, how long it takes to kill a small animal, and he judges how long it will take to kill a large one. In black leg none of these results can be obtained from the dry powder, and we shall not obtain any satisfactory conclusions until we have the germ cultivated in an absolutely pure condition, provided it will live in that condition, because I believe it requires the presence of another germ to develop its pathogenic principles, the same as we are now led to believe by continental observers is the case with regard to the germ of tetanus.

Mr. Hughes:—In my district I am in the habit of setoning a great many calves at the wish of my clients, but I have seen calves dying, setons having been inserted three months before. I believe that the free use of chloride of sodium, regularity in the feeding, care to avoid exposure, attention to the animals, and keeping them thriving, has a great deal to do with it, and will probably modify the conclusions that we draw from setoning. I have seen them dying after the setons have been in a week, a month, and two or three months. The breeds that I have had most to do with are the Shorthorns and the Cross-breeds, and I find black quarter is as much in the one as in the other. In my opinion a great deal has to do with how they are treated on the farm.

Prof. Williams:—One thing seems to have been overlooked, namely, the greater mortality which occurred from black leg in the past than occurs at the present time. In the old days black leg was very common indeed in many parts of Wales, but since the land has been drained properly black leg has almost disappeared. I think that drainage has been certainly the salvation of millions of animals, even in my time. This leads to the conclusion that the germ or the bacillus is in the food, and is obtained from the land. It must gain entrance into the animal before the disease can be developed, but there are no doubt predisposing causes, various forms of feeding, and so on. Then we come to the question of setons, and I must confess I do consider that setoning to a great extent is a preventive of black leg.

Mr. McGavin:—As the Professor has just mentioned Wales I may say I come from Wales, and I know that in places which have been thoroughly drained within the last 20 and 25 years, black leg is quite as prevalent as on undrained land.

Prof. Walley:—I should like first of all to refer to the statistics given in the paper as to age. During the time that I was in practice in a very large district, my experience was that calves rarely got black leg over one year. I found that the greater number of cases occurred in seven, eight, nine, and ten-month calves, and I never saw black leg but once in my life in a two-year-old animal. I quite agree that black leg is more frequent in some districts and in parts of districts than in others. With regard to the difference in management, I may point out that as long as I remember, in my early days we on our own farm lost no sheep from black leg, in fact, up to the time of my father's death. After his death the farm was managed by a bailiff, and we lost a number of sheep. We found them lying dead morning after morning, and I attributed that to something in connection with their general management. I have known drainage utterly do away with black leg, so that there is something undoubtedly in the argument that particular lands are more liable to produce it than others. Now as to prophylactics. My experience with reference to setoning, is, that on the whole it is a reliable prophylactic in black leg, and I will here quote one example. Mr. Naylor's calves, when I was practising at Welshpool, suffered very much from black leg. His bailiff came to me one day in the market and said, "I have lost a calf from black leg; we have 61 others, and I want you to come over and seton them." When I arrived there at six o'clock the next morning I found another calf dead—a magnificent Shorthorn—of course the very best of the whole herd. I setoned these calves, and never another died. I subsequently setoned another lot of calves where all kinds of treatment had been tried without arresting the disease, and the setoning succeeded. At that time I administered a large quantity of iron and salt and gentian in addition to setoning. I began also to use carbolic acid, but whether it had any beneficial effect I do not know—I suspect it would have indirectly. In reference to the method of setoning. The method of setoning adopted by my preceptor, Mr. Kettle, of Market Drayton, was to use a piece of tape or similar material saturated in a liniment composed of equal parts of turpentine and oil, and one drachm of croton oil to every eight ounces. When he first commenced using this one calf died, and he found that he was using the croton oil in too large quantities. Subsequently when the croton oil was reduced we never had to take out another seton, and never lost a calf. I was rather surprised that Prof. McFadyean did not refer to an article that appeared in one of the recent numbers of *The Journal of Comparative Pathology*. That article was on blue pus, and when I read that article on the antagonism of certain organisms and their products to other organisms, it struck me that here was the explanation of black quarter, and when I came to the end of it I noticed that Prof. McFadyean had come to the same conclusion. It is possible that that may be the explanation of the value of setoning. A point of very great importance which has not been referred to, is, why is the lesion localised always in one particular spot? Why is it localised in one leg, and so on? There is an explanation on the point. We know that if you inject the virus of black quarter into the blood, and you subsequently bruise the tissue in any part, as in the case of inoculation in pleuro-pneumonia, you will get a local lesion, and we should assume in all cases there is a crushing of the vessels and extravasation of the blood at the particular point where the disease

makes its appearance. I have thought one explanation may be this: that animals that are particularly thriving get lazy; they lie down comparatively early in the evening, and will lie for hours. Is there not a probability that from the pressure on a particular leg, with their great weight and tender tissues there may be some crushing, or, at any rate, more or less stagnation and congestion?

Mr. B. FREER:—I for one am a firm believer in setoning as a preventive of black leg, and I never remember having seen one that died with a seton in the dewlap. I believe a great deal depends on the manner in which the animals are setoned. I do not believe that just sticking a little bit of tape through with ordinary turpentine liniment does very much good, but you must set up an enormous amount of irritation. I have never seen an animal dead that has been setoned in that manner.

Prof. WALLEY:—I should like to ask with reference to the experience of members as between bull calves and heifer calves. As far as I am concerned I cannot recollect a bull calf dying, and I came to the conclusion in my own mind that it was due to the extra restlessness and vigour of the bull calves as compared with the others.

Mr. CAMPEELL:—I have been for the last two years experimenting upon black leg in order to find out a proper prophylactic, but during the last year I have not had a single case in the district, and my opinion is that black leg will disappear from this country in the same way as red water will in a very short time disappear. I have tried salt; I used salt on a farm where there were simply cross-bred cattle affected. I had more deaths that year than ever I had before or since. I have also had animals that have died after being setoned. Septic material that is being constantly absorbed from the irritated part produced by the seton, and a counteracting effect is produced on the virus of black leg. I have exterminated black leg by injecting into the system the serum of blood from the animals that have died, and I have a record at home of a number of such cases.

Mr. MCGAVIN:—In answer to the enquiry as to whether male or female animals are most liable, I think there is no difference. I know a place where they rear bulls and sell them at a good figure, the bulls having a good pedigree, and I may say that I have seen two or three of those bulls die in one year from black leg, even though great care was taken in the feeding of the animals.

Mr. HUNTING (Sen.):—I wish to say one word about the use of cake for young animals, simply because my experience has been the reverse to that which Mr. Olver has brought before us to-day. We generally breed from 200 to 250 lambs in each year, and soon as ever the lambing season is over we put our ewes on the decorticated cotton cake, and most of the lambs eat it readily within a fortnight of their birth. As we generally bring from 60 to 100 of the best lambs into the market fat, we allow them to eat the cake *ad libitum*. I have never seen during these eight years a single case of black quarter in any of the lambs or sheep through eating this cake.

Mr. OLVER:—What I said was, that it would kill the sheep; I said nothing about lambs.

SWINE FEVER.—At a conference of representatives from Norfolk, Suffolk, Essex, Cambridge, and Huntingdon, held in Ipswich last week, a motion was adopted to approach the Board of Agriculture with a view of procuring the passing of an Act compelling the registration of dealers in swine with the local authority, the issuing of dealers' licences, forfeitable on breach of regulations, and the registration of all purchases and sales by dealers.

ROYAL DICK VETERINARY COLLEGE.

At the opening of the College for the Autumn Session the following address was given by Professor WALLEY:—

BAILIE TURNBULL, LADIES AND GENTLEMEN,

We meet this year in circumstances of more than ordinary interest to veterinary surgeons and those associated with them, and who are anxious for the welfare of the profession. In the first place, this year marks the centenary of the establishment of the veterinary profession in Great Britain, and, in the second place, there has recently taken place the most important meeting, to the medical and veterinary profession alike, that has ever been held in this country—I refer to the Hygienic Congress. It must not be assumed that because this year marks the centenary of veterinary teaching nothing was known of the veterinary art prior to the establishment of a teaching school. It would be as tedious as it is unnecessary were I to trace back the dawnings of your profession in the remote ages; it is, however, a matter of interest to know that for centuries prior to the birth of Christ the veterinary art was practised; and according to Blaine, to whose writings, in association with Bracy Clarke, we owe most of our knowledge on this subject, Chiron, surnamed the Centaur, combined the practice of human and animal medicine; and Hippocrates, the most celebrated physician of early times, wrote a treatise on the curative treatment of horses. In the reign of Elizabeth appeared Blundell as a veterinary author in this country, followed by a number of others, amongst whom was Gervase Markham. This writer was again followed by Gibson, a surgeon in a cavalry regiment, and he again by Bartlet, who was likewise a surgeon; and Bartlet was succeeded by still another surgeon of the name of Osmer. The foundation of veterinary teaching in this country was laid by a Frenchman, Charles Vial de St. Bel, and it is an interesting circumstance that the first public veterinary school had its birth in France. It was established at Lyons under the direction of the celebrated Bourgelat, in 1761. From this school St. Bel graduated, and in the year 1791, after various attempts and failures, he succeeded in establishing what may be looked upon as the nucleus of the Royal Veterinary College of London; but—and this I would note particularly—he did not succeed in his endeavours until he had secured the co-operation and support of an agricultural society—viz., The Agricultural Society of Odiham in Hampshire, just as Dick years afterwards largely owed his success to the Highland Society of Scotland. St. Bel it seems did not live long to witness the success or otherwise of his scheme—he died in 1793; and although the names of Mr. Blaine, of London, and of Mr. Bracy Clark, of Edinburgh, were brought forward, the mantle of St. Bel was ultimately thrown ever the shoulders of Mr. Morecroft (originally a student of human medicine), who had studied the veterinary art in France; and, conjointly, Mr. Coleman, who also commenced life as a medical student. In the course of time the secession of Mr. Morecroft left the management of the school in the hands of Mr. Coleman, and we are told that during his time the veterinary profession received much encouragement and assistance from the celebrated John Hunter, and further the reigning king, George III., granted the rank of commissioned officers to military veterinary surgeons, and the British Parliament voted a sum annually towards the support of the veterinary college. Coleman was followed successively by Sewell, Spooner, Simonds, and Robertson, all of whom, except the veteran Simonds, have been gathered to their fathers. This sketch could scarcely be looked upon as complete were I to omit a reference to the early struggles of the late Professor Dick in the establishing of the first Scottish

Veterinary School in 1823. One more observation in this connection I may be permitted to make—*i.e.*, that St. Bel was subjected, at his own request, to an examination for the purpose of testing his fitness to occupy the position to which he aspired, and on that examination board sat John Hunter, with Mr. Cline, the well-known surgeon; and I hope you will not put it down to egotism on my part when I tell you that I am the only British veterinary teacher who obtained his chair by the ordeal of an examination.

There are two aspects of the history of the foundation of veterinary teaching in this country which demand a little attention. The first is that it was dependent upon a Frenchman. The second that it was supported and encouraged by members of the sister profession. But, allowing that we were indebted to one of our friends across the channel for its initation, we may derive a little consolation from the knowledge that an English veterinary surgeon—Mr. Blaine—was shortly thereafter honoured with a request that he would proceed to Russia for the purpose of presiding over a College then to be established; and from the foundation of the London College onwards medical men have drawn pretty largely on the financial plums of our profession in the shape of fees as teachers and examiners.

Now, gentlemen, and addressing myself to veterinary students, what is the difference from an academical point of view, in the profession of the past and the present? In its early days the scholastic course must have been of a very elementary character and of very short duration. I have no exact information on this point, but I had it from the lips of one who has now passed away, that many of those of the last generation of veterinary surgeons who studied in the London School were subjected only to the toil of a three months course, and even in my student days, 30 years ago, the whole course extended practically over about twelve months. I will, however, not take you so far back as that, but will conduct your minds over two decades only—to the time when I became a teacher in this institution. The whole course of study was completed in about twelve months. The subjects taught embraced only medicine and surgery, physiology, anatomy—mainly that of the horse—and chemistry, with a smattering of a few of the collateral sciences. The examination extended over one hour only, and the prizes open to competition consisted of a few silver medals and one gold medal, given by the Highland and Agricultural Society, with an occasional *bonne bouche* in the shape of a case of instruments thrown in by some well wisher of the College. Even in my own day as a student the prizes consisted only of two medals and a certificate, which were embraced in what is known as the "Coleman Prizes," and a silver medal given by the Veterinary Medical Association for the best essay of the year, and one for anatomy.

Contrast all this with the present; the period of study has been extended by the addition of an extra winter and two summer sessions. The subjects taught have been increased by the addition of comparative anatomy of the domestic animals, of practical histology, practical pathology, botany, veterinary hygiene and a number of other less important subjects; the examination is divided into four distinct parts; the number of prizes increased many fold, and their value greatly enhanced; and lastly, all that had to be said as to the course of study and other matters occupied only two sheets of paper as contrasted with the 78 pages of our present prospectus.

Yet, notwithstanding all this veterinary education in this country lags far behind that of some of the Continental States. No Government aid is forthcoming either to students or graduates, and the only outside encouragement of any importance that students at present get is that emanating from the generosity of one man—Sir Frederick FitzWygram—while as to graduates, there is absolutely no stimulus offered to the further pursuit of their studies. I sincerely hope that the time is not far distant when this disgraceful state of things will be altered, and already we see signs of a change, we see it in the recent vote of the Royal College of Veterinary Surgeons of £50 annually towards the foundation of a Scholarship, and in the munificent addition of £50 made thereto by the Central Veterinary Medical Association, and I have no doubt but that the proceeds of the comparatively large sum subscribed to the Steel Memorial Fund will be devoted to some such purpose.

The other subject upon which I wish to address a few remarks to you to-day is the late meeting of the International Congress of Hygiene and the lessons it has taught us. The influence for good that this meeting has had, and will have on the future of Hygiene and Veterinary Medical Science, cannot be estimated. When we look upon the numberless subjects dealt with and the amount of work accomplished we must all be impressed by the amazing industry and energy shewn in the different sections. Taking, for example, the sections in which we are more especially interested, we find that no question of any importance affecting the health of man and animals conjointly or separately was overlooked. Diseases produced by animal parasites; rabies, tuberculosis, anthrax, diphtheria, actinomycosis; water, milk and meat infection, and the broader question of general hygiene, received their quota of earnest attention, and evoked a full measure of discussion. Composed as the Congress was of scientists and sanitarians from all the important countries of the civilized world—representatives of France, Germany, Austro-Hungary, Russia, Roumania, Belgium, Holland, Denmark, America, and Italy, being present—all of whom joined in the discussions and freely interchanged ideas, this Congress must stand out as one of the most brilliant accomplishments of the present decade. Although the views entertained by those assembled were not emphasized by the adoption of set resolutions, they were expressed with sufficient clearness and decision to give the collective results all the weight of formal votes. A flood of light was thrown on some obscure points, well established views were upheld, fallacies were exposed and false theories were exploded; and to those of us who have in the past disseminated and supported our opinions on such subjects as the inspection of meat and milk—the dangerous qualities of tuberculous food products, the necessity for scheduling such diseases as tuberculosis as infectious diseases; the net results of the discussions were eminently satisfactory.

Amongst the most important results of the Congress are the expression of an unanimous conviction—by those engaged in the discussions—of the identity of human and bovine tuberculosis; and the overwhelming contradiction of the views held by certain pathologists, that the cow is, in herself, a prime and primary source of such maladies as diphtheria and scarlet fever. It can hardly be expected that those who have for so long persistently advocated the view that the cow is a source of infection to man will be influenced by what took place; but to those whose comfort, and, in some cases, whose very existence is dependent on the milk of the cow and its products, the result of the discussions can but have a very encouraging and satisfying effect. There is one aspect of the discussion on this subject to which I would especially direct attention, and that is that amongst those who supported the charges made against the cow as a pathogenic factor or source of infection to the human subject, there was scarcely one who did not take the opportunity to state that in the course of their investigations into the origin of particular outbreaks of disease they had superseded the veterinary profession, and, in their own minds, had proved themselves superior to its members in their knowledge

of bovine disorders—one could not resist, when listening to these gentlemen, asking himself the question, what would these men say if veterinary surgeons had the temerity to walk into any of our hospitals or infirmaries and attempt to show that their knowledge of the diseases under which the patients therein were suffering was superior to that of the medical men in attendance? That good has come, and will still further come, out of the promulgation of such views as those referred to, I do not for a moment deny; it will be, and it has already been, the means of directing attention to the unsatisfactory conditions under which a vast proportion of our cow population exists, and to the utter neglect of even the simplest sanitary principles by those who have charge of our milk supply; and if, in the long run, it leads to the adoption of a more rigid and more competent inspection of our dairies, the initiation of legislative measures in reference to the more important ailments of the dairy cow, it will be the means of conferring an immense boon on the milk-drinking portion of the population.

Looking at the work of the Congress in its scientific aspect one could not but be impressed with the vast strides made in the subject of the etiology of disease. Much that has been dark in the past has been made light by the labours of the microscopist, the chemist, and the bacteriologist. During the last twenty years a new science—microbism—has arisen, and an addition has been made to the list of scientists in the microbist. The microscopist of the past had a very limited *rôle* to fill; twenty years ago we had scarcely awakened to the fact that the vast majority of the contagious maladies affecting man and animals had as their causal entity a living organism. True it is that we were in the habit of speaking of specific diseases and we thoroughly believed that each one of these so-called specific maladies had a special or specific origin but of the actual nature of the specific element we were in the dark. By the aid of the microscope it was discovered that our drinking water was frequently charged with animalculæ, and we had little hesitation, in some instances, in ascribing to these disease-producing properties. In course of time it was recognised by Obermeyer that relapsing fever was due to a spirillum, and by Pollender the further fact that anthrax was due to a bacillus; but our knowledge of the nature of these organisms was so limited that they were thought to belong to the animal kingdom, and were classified as protozöa—now it is proved that they belong to the vegetable kingdom.

I think it must be acknowledged that the work of Chauveau in showing that the virulence of variolous lymph was due to its solid elements stimulated research into the nature of the causal elements of disease, as did also the discoveries of Tyndall that the air was surcharged with solid particles, of Pasteur that all fermentative and putrefactive processes owed their inception to living organisms, and of Lister that septicity was never induced in wounds if they were effectually protected from the atmosphere, or rather from the influence of its invisible denizens. Probably greater impetus was given to bacteriological research by the result of Pasteur's labours in connection with the prophylaxis of rabies, and by Koch's discovery of the bacterial origin of tuberculosis than by all the discoveries that have been previously made in this direction. Scepticism was the stimulus which, in many instances, led pathologists to endeavour to show that Pasteurism was a delusion and a snare, but the result has been that many new facts have been brought to light. The opposition to the theory of the bacterial origin of tuberculosis was much less fierce and was much shorter lived, but in each case the ultimate triumph of the respective theories in one direction or other has been equally great. In like manner the announcement of the therapeutic virtue of Koch's Tuberculin stirred up an agitation such as had never been surpassed, and has only been equalled by the Pasteurian agitation; and even if it is ultimately shown that all the good that it was primarily hoped would accrue from the curative influence of the tuberculin has not been attained, the promulgation of the theory has been the means of increasing the number, and stimulating the energies of investigators, and it may lead to the discovery of facts of the utmost importance to the suffering brute creation. The progress made by bacteriology can be best estimated by contrasting the earliest work on the influence of micro-organisms in the production of disease with those of the present day. I refer to Klein's little work, published in 1884. From a small manual of a few pages works on bacteriology have increased to the size of large volumes, the contents of which cannot be mastered without prolonged and earnest study, and yet, notwithstanding the vast strides that have been made in this department of science, there is much to be discovered. The causal entity of small-pox, of scarlet fever, of measles, of cancer, of rabies, and of several other important maladies is not yet recognised, but in the light of our knowledge of the etiology of similar affections we are warranted in drawing the conclusion that every one of the diseases mentioned owes its origin to a specific element, in other words, to a micro-organism.

But while we recognize the vast importance of the *rôle* played by bacteriology in the prophylaxis of disease we must not forget that one of the greatest triumphs, nay, I think I may say the greatest triumph of preventive medicine—the discovery by Jenner of the value of vaccination as a safeguard against smallpox, was achieved without its aid, and the same must be said to some extent of the Pasteurian inoculation in rabies.

In the matter of the practical suppression of disease, science has not yet accomplished very much. Vaccination in variola and rabies strikes rather at prevention than suppression, and it is a significant commentary on the value of science that at the present moment the home of Pasteurism bears an evil name in reference to the prevalence of rabies. It cannot be denied that the devising, and carrying out of elaborate measures for the combating of virulent disorders has not been so successful as has the adoption of much more simple methods.

I have, on a previous occasion, in this room directed attention to the outbreak of rabies in this city in 1881, and you will pardon me if I for a moment or two again refer to it. That outbreak had attained to alarming proportions and had spread to some of the surburban districts before any organised attempts were made to arrest its progress, and yet within the short space of a few months it was entirely suppressed, and that, too, by the adoption of such practical measures as were, and are, in the power of magistrates all over the Kingdom to put in force. If the procedure followed was found to be so efficient in suppressing the malady in this city surely they could, if carried out with equal vigour be equally efficacious in the case of other towns and cities. But, admitting their success, I am of opinion that they should, in all cases, be supplemented by the institution of a periodical raid on the vagabond portion of the canine population, and while we did not find it to be the fact in the Edinburgh outbreak, (as is so persistently stated by some) that the vagabond dog was more frequently the subject of Rabies than his more favoured brother. I am, nevertheless, of opinion that such a class of dogs should not be allowed an existence amongst us. It is remarkable the rapidity with which a scare is raised when a slight recrudescence of Rabies takes place, and many absurd and impracticable measures for its suppression are suggested, as for example the universal muzzling of dogs. There is one simple preventive measure that might easily be put into universal operation, and one which would not only reduce the danger to a minimum, but would be the means of preventing the infliction of

serious injury on both man and beast, and would, to a very great extent, reduce the damage inflicted on sheep by sheep-worrying dogs—I refer to the simple plan of removing the points of the canine teeth. It is an absolutely painless operation, and by leaving the blunted teeth projecting a little above their neighbours it would serve to reduce the effects of any injury that might be inflicted by them. If such practical measures as those I have alluded to were universally enforced, Pasteurian vaccination for Rabies would, in a very short time, be applicable only in the case of the inhabitants of districts exposed to the attacks of wild or semi-wild animals.

Closely connected with the causation of disease is the study of the influences at work in rendering certain animals immune to the influence of particular vires. It has for long been a recognized fact that particular animals are the natural hosts of particular maladies. Thus glanders is, as it were, indigenous in the system of the horse, pleuropneumonia in that of the ox, and rabies in that of the dog; but the actual nature of the forces in operation to render animals immune to the influence of the virus of particular maladies has been, and is even now, imperfectly understood. Chemical, physical, and physiological theories were each in their turn originated; but the greatest impetus has been given to this branch of preventive medicine by the publishing of Metschnikoff's views of the phagocytic (germ-devouring) function of the white cells of the blood; and perhaps the most important result of the prosecution of this line of enquiry is the conclusion arrived at by Hankin, that in the blood of animals there exists substances which he has designated defensive proteids, that have the power of destroying particular micro-organisms, or at least of counteracting the influence of the poisons they generate.

I cannot dismiss this subject without again drawing a contrast—a contrast between the past and the present. In the days of my pupilage microscopical work was an almost unknown quantity in the daily work of the student, probably not more than three of the whole number of my contemporaries possessed a microscope; but most certainly there was not half-a-dozen amongst us who understood its use. When I entered this institution as a teacher there was no organised instruction in microscopy, and in the first year of my principalship a very modest commencement was made by a class of five or six senior pupils, but even with the little aid I was enabled to give them, the benefit resulting therefrom was so apparent that I was determined at the earliest opportunity to establish it on something like a systematic basis, and a class of practical pathology was started, with my late assistant, Mr. Alex. Gray, as the demonstrator; and from this there has arisen the splendid class conducted so successfully and with so much benefit to the students by Professor McFadyean.

You gentlemen, students, have a great advantage over the student of my day. Chemistry and microscopy have revealed to you the fauna and flora of an invisible organic kingdom, and the latter science has served to bring home to your mind that the infinitesimally small in nature is really the infinitely great. It is for you to take advantage of the labours of the scientists in the past and in the present, and to utilize their work in preparing yourselves for your future career. Unknown to the individuals there may be embryonic Pasteurs or Kochs amongst you, but the world will never reap the fruits of your talents if you do not cultivate and nurse them now. Strive earnestly to emulate the career of the shining lights of science, and if in the end you fail in reaching such a standard as that to which many scientists have attained, the attempt to reach it will exercise an ennobling influence on your character, and will leave you the satisfaction of having at least endeavoured, in your day and generation, to accomplish some good work.

EXTRACTS AND NOTES.

THE DETERMINATION OF SEX.

By Chas. R. Straton.

According to Mr. Andrew Wilson's theory in *The Lancet* of Sept. 26th sex is determined by the condition of the ovule at the time when it comes into contact with the spermatozoon; and this he holds is greatly influenced by the time which elapses between the extrusion of the ovule from the ovary and its fertilisation. If insemination occurs before a menstrual period, so that the spermatozoon meets the ovule high up, the nutrition of the ovule is held to be still active (anabolic), and a male embryo results; if insemination occurs after them enstrual period, the ovule is met lower down when it has travelled farther and become wayworn (katabolic), and a female conception follows; but should insemination happen (as can only rarely be the case) in the middle of the menstrual period, then the ovule is in "stable equilibrium," and a hermaphrodite is the correspondingly rare issue. There is something so captivating in the Aristotelian simplicity of this theory that physiologists would hail it with gladness were it only supported by results. It is difficult, as Mr. Wilson says, to collect sufficient evidence in the case of man, but we have no reason to suppose that man differs in this respect from other mammals. Stockbreeders adopt a pretty uniform rule in covering animals. A cow's season lasts about twenty-four hours, and it is the practice to endeavour to obtain the services of the bull about twelve hours after the season has come on. According to Mr. Wilson's law this ought to result in a race of hermaphrodites, but such is not the case; male and female calves are fairly mixed. Occasionally it is found that the twin of a bull calf is a "free-martin," and then we have possibly the rare exception that proves Mr. Wilson's rule. Again, if a ram be turned into a sheepfold he will cover each ewe just at the beginning of her season: and stallions in the New Forest will take the mares in the same way, just as their season comes on; but the races of sheep and horses do not die out, as they would speedily do if the consequence of this uniformity of custom were to produce one sex only. The time of insemination in these cases does not support Mr. Wilson's theory, but in that theory does he not go somewhat unnecessarily out of his way in reversing the theory of Geddes and Thomson? Their view he thus summarises: in a katabolic habit, when waste exceeds repair, males preponderate; in an anabolic habit, with nutrition in excess of waste, we have a majority of females. Since the great body of facts support Geddes and Thomson, why should Mr. Wilson elect to put his theory against theirs, when, had he thought for a moment, he might have made it agree with their statistics? Surely when the ovule has had far to travel and has become wayworn, the spermatozoon can have had but a little way to come and must be still hale and vigorous. And, on the other hand, when the ovule is met high up and is fresh and hearty, the spermatozoon must have toiled far and have become tired and weary. Had

Mr. Wilson based his theory on the nutrition of the spermatozoon, instead of on that of the ovule. he would have found himself in accord with Geddes and Thomson. A katabolic spermatozoon would beget a male, an anabolic one a female. But he forgets the spermatozoon altogether; he thinks only of Penelope, and leaves Ulysses tossing unheeded on his raft.

The determination of sex rests on a broader basis than the date of insemination, and is regulated entirely by the requirements of the species. The existence of the sexes is not essential to reproduction, and many highly organised species propagate themselves without sexual concourse. The Cynips kollari, for example, which produces the marble galls so abundant at this season on oak trees, has no male, and goes on propagating itself in unbroken succession in the female line. Other hymenoptera which have two generations in the year have a winter generation which is female only and a summer generation which is sexual; the Spathegaster baccarum emerges male and female from the currant gall of the oak in June; after the nuptial flight the female deposits her eggs in the under-surface of the young leaves, and over them rises a totally different gall, the common spangle, from which emerges next April the Neuroterus lenticularis in the female sex only; when she has pricked the young buds we have the currant galls formed again. These two species are linked together in one generation cycle. Others of the hymenoptera which propagate habitually by conjugation of the sexes, still retain the power of reproducing themselves in the female line when the life and continuance of the species is threatened, and parthenogenesis is called for to save the race The queen bee is fertilised by the drone only on the wing, and if fertilisation be prevented by depriving her of her wings just before the nuptial flight. she will nevertheless go on laying her eggs; but these eggs, instead of producing females, as they would have done for months if fertilized, will produce for a time only males—the need of males by the species having been in some way realised, males are produced.

But if sex is not actually essential, it is an extremely valuable aid to a species in the struggle for existence. When the germ plasms in one species are derived from one parent, and in another species from two parents, it stands to reason that the variation in the descendants of the sexual generation will be infinitely greater than in the asexual; and the greater the variation in the progeny, the greater will be the chance of survival in the struggle for existence. It is therefore of importance to a sexual species *to maintain both sexes;* and just as in the bee, if either sex is specially called for that sex is reproduced in greater abundance, so as to secure the continuance of the species. If a young ram be put to a flock of five-year-old ewes, 70 per cent. of the lambs will be females and 30 per cent. will be male, and there will be a goodly number of twin births. If an old ram be put to a flock of young ewes, 70 per cent. of the lambs will be male and 30 per cent. female, and there will be no twin births. But if the probability of life in both parents be equal, and a five-year-old ram be put to five-year-old ewes, the sexes will be about equally represented in the offspring. If to either of these conditions we add variations in the quantity of food and in the ease with which it is obtained, we have a further set of modifying conditions. When food is abundant and easily obtained, large flocks are possible and female issue preponderates; when mountain pasture is scarce and long distances have to be traversed the male sex is increased. A study of these facts appears to lead to the conclusion that anything in the parents or in the environment which declares the production of either sex in greater abundance to be necessary for the welfare or extension of the species, makes itself known through the parents, and so modifies the constitution of the male and female pronuclei as to produce more of the sex required. It is quite possible where insemination at the outset of the menstrual period has long been the rule in a species, that delaying it unusually might give an impression of scarcity of males, and male births would result, which would accord with the Geddes, but not with the Wilson, theory.

It seems difficult to describe the mechanism by which constitutional weakness and the infirmities of age are stamped on the ovule and spermatozoon better than by the term "katabolism" and the opposite conditions by that of "anabolism." It is clear from the facts I have given with regard to the age of rams and ewes that some physical changes are caused by age and environment, which affect equally the male and the female nuclei, and have been impressed upon each before insemination took place.—*From the Lancet of Oct. 10th.*

Napoleon's Favourite Charger.

There is in the possession of the Household Brigade a horse's hoof, polished, shod, and mounted so as to do duty as a snuff-box. It is kept at the Guards' Club, where, through the courtesy of Col. Bridges, I was permitted to examine it. The hoof itself is not a model, nor is it finished with the same artistic elegance as is displayed in the "get up" of the horny relics of deceased favourites nowadays. Its interest lies in its historic associations. It was a hoof of the great Napoleon's favourite charger Marengo. There has been some doubt expressed as to which foot it belonged to, but I think its form leaves no uncertainty as to its being the hoof of a right hind foot. On the outside of the gold lid is the following inscription:—

HOOF OF MARENGO,
BARB CHARGER
OF
NAPOLEON,
RIDDEN BY HIM AT
MARENGO, AUSTERLITZ, JENA, WAGRAM,
IN THE CAMPAIGN OF RUSSIA,
AND LASTLY AT WATERLOO.

As Marengo was fought in 1800 we may conclude that this wonderful charger was at least about twenty years old at Waterloo. An inscription on the inside of the lid tells us it was—

PRESENTED 8TH APRIL, 1840,
BY
H. W. ANGERSTEIN, CAPN. GRENR. GUARDS,
AND LT.-COLONEL
TO HIS
BROTHER OFFICERS OF THE HOUSEHOLD BRIGADE.

Round the outer margin of the shoe—a silver one of the form usually applied to fore feet—is the following: "Marengo was wounded in the near hip at Waterloo when his great master was on him, in the hollow road in advance of the French position. He had been frequently wounded before in other battles."

By way of getting at any further history of Marengo, Col. Bridges told me that the skeleton and other hoofs were to be found at the United Service Institution, and gave me a pass to view them. On arriving there I found the skeleton and two more hoofs, a fore and hind one, both of left feet. Probably, therefore, an off forefoot is still in the possession of the late Col. Angerstein's family. The skeleton is that of a very small animal, and agrees with what an attendant at the institution told me, that Marengo was a barb about fourteen hands high. From the same source I also learnt that he was purchased at the sale of Napoleon's effects in Paris by Col. Angerstein, and kept by him till he died of old age. The tradition that he was used by his last owner for stud purposes I do not believe. The frequent wounds referred to in the inscription on the shoe have left no mark of injury on the bones. This feat was reserved for the individual who mounted the skeleton, but perhaps I should use the word insult instead of injury, for the spine of this rare animal is arched like the back of a frightened cat, his pasterns are in a straight line with his shank-bones, while his hocks are bent like a cow's.

How is it we so seldom see a properly-formed horse's skeleton? Even at veterinary colleges and in anatomical museums a naturally formed skeleton is rare.

W. H.

CORRESPONDENCE.

SCROTAL HERNIA IN COLTS.

DEAR MR. EDITOR,

Being a young practitioner, working hard for my daily grub, and also keeping up the dignity of my profession against very heavy odds, may I ask the profession through your valuable paper, *The Veterinary Record*, a question or two.

When is it advisable to operate on a young colt which shows symptoms of the above—When they are a few months old, or even at birth?

Which operation is the best?

I may add that I have had several cases this season, but have not operated yet on these.

Hoping this will catch the eye of some charitable gentleman, if not, a word or two from your valuable pen, Mr. Editor, would be very acceptable.—Yours, etc.,

YOUNG VET.

ACTING VETERINARY SURGEONS (YEOMANRY)

DEAR SIR,

The new Army Warrant, copy of which I see in your issue of to-day, has decided me on bringing the question of rank and status of Yeomanry Acting Veterinary Surgeons before the profession generally, and brother Yeomen especially, in the hope that some correspondence on the matter may follow and help to place us in our proper post, *i.e.* that of officers, for at present I am totally unable to place myself in any class or rank, com., non-com, or trooper. Now the amount of work that has to be done by the yeomanry vet. is anything but pastime, and far in excess of that done by his brother practititoners in the regular service, what with stable rounds twice daily, sore backs, pricks, colic etc., and presence all day on drill ground, it is 12 hours of continual work the whole of the 10 days of permanent duty. Now what is the return made by a grateful Government who have had the benefit of your professional services and constant attention for 10 days (and nights) at great personal inconvenience and pecuniary loss to yourself? 7s. per diem, the privilege of wearing a nondescript uniform—a mixture of officer and trooper—and £5 allowance for medicine for 300 horses.

When I accepted the post of acting Veterinary Surgeon to the regiment it was with the impression that an acting Veterinary Surgeon was an officer as much as an acting Surgeon, but alas for sweet simplicity! I was doomed to a rude and early awakening. Now the immediate cause of my rushing into print on the matter is that last week a sergt.-major of the regiment came and informed me that I must do my course of target firing at once, which I immediately refused to do at all, for if we are to act professionally and be combatants—and troopers only at that, why I, for one, wash my hands of the whole business. Why the great social distinction between the ordinary well educated country Vet. and the mighty Army man?

FAIR PLAY.

THE TITLE "VETERINARY SURGEON."

SIR,

I conclude "Hereditary Vet.," who wrote in last week's issue on "Our Title," is one of those "good men and true," who have no diploma, that we should look up to in cases of difficulty where their ounce of practice is worth our pound of theory?"—at least his letter looks like it, as he is ashamed to sign his name to it. I admit there are some practical men who are good at castration and calving, but why dub those men veterinary surgeons? If they are good in their department keep them to it; if they are registered let them put on their sign-board: "So-and-So, Registered Castrator, &c." I have nothing to say against such men; but let them keep their place, and not gull the public by stealing our vested title. There are four registered practitioners in this district—two farmers and two blacksmiths—who never used the title till they were registered; now they publish it far and near.

I quite agree with Mr. Kidd that a registered practitioner has no legal right to the title veterinary surgeon; the Act of 1881 never gave or conferred this title on him. As Mr. Walker says, in his letter of the 19th inst., "It only allowed him to earn a living." We look to our Council to settle all matters, and why do they not settle this vexed question at once and for ever? Why not take up a test case and try it at law? If it is then found that they have a legal right to use the title, allow them to do so, and there is an end of it; but if otherwise, then punish them for infringing on it. I hope, as Mr. Kidd has taken up this question he will go on with it, and have the assistance and support of every member of the Royal College of Veterinary Surgeons.—Yours, &c.,

J. MCGAVIN.

SIR,

Replying to his letter letter of the 3rd inst., I would ask "Looker on" to please state where in our Act it "specially provides to Registered Practitioners the use of the title "Veterinary Surgeon" they have used for years"?—Yours faithfully, M.R.C.V.S.

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Prof. Walley, Prof. W. O. Williams, "Liverpool Evening Express," "Saddles and Bits."